

R E M A R K S

Claims 1, 2, 5 and 7-13 are pending and stand ready for further action on the merits. Support for the amendment to claim 1 and new claims 8-13 can be found in the specification at page 13, line 19 to page 14, line 9. No new matter has been added by way of the above-amendment.

INTERVIEW

Applicants note with appreciation that the Examiner conducted an Interview with Applicants' representative on July 28, 2004. The Examiner was very helpful in clarifying experimental designs, which would show distinctiveness of the inventive features.

On the Interview Summary Form, the Examiner summarizes the interview as follows:

"Counsel proposed to supply experimental data showing criticality for the claimed composition. Counsel was advised that any experimental data would be considered only in an RCE. Any determination of patentability will be made when the data has been made an official part of the record, viz. in an RCE."

Applicants will provide further details of the Interview below.

Issues Under 35 U.S.C. 103

Claims 1, 2, 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagasuna et al. (USP 4,973,632) in view of Ishizaki et al. (USP 6,254,990). Applicants respectfully traverse the rejection.

The present invention is drawn to a carboxyl group-containing polymer composition showing excellent solubility in water and giving the aqueous solution excellent thickening properties. These compositions may be used as thickeners and suspension stabilizers for emulsions and suspensions by dissolving the polymer in water and neutralizing the solution with an alkali to give a neutralized viscous solution.

The advantage of the inventive polymer composition in the above-described applications is that it will readily form a homogeneous aqueous solution of the polymer. Thus, the inventive polymer composition can be used with a high production efficiency and there is no need for a specialized dissolving device for prevention of the generation of undissolved powder lumps.

These advantages are clearly shown in the attached Declaration under 37 C.F.R. 1.132 by Mr. Masatoyo Yoshinaka.

The components of Example 1 of Nagasuna et al. have their counterpart in the inventive claims as shown in the following Table:

Example 1 of Nagasuna et al.	Counterpart in Inventive Claims
sucrose fatty acid ester (DK-ESTER F-50, HLB=6, a product from DAIICHI KOGYO SEIYAKU Co., LTD.)	ester (c) obtained from a polyhydric alcohol and a fatty acid
sodium acrylate, acrylic acid	α,β -unsaturated carboxylic acid (a)
N, N'-methylene-bisacrylamide (a crosslinking agent)	No exact counterpart is in the claims but the claims do include as crosslinking agents at least one of pentaerythritol tetraallyl ether, tetraallyloxyethane and polyallyl saccharose
Hydroxyethylcellulose	No counterpart

The experiments in the Declaration show the inventive components provide a superior water-soluble polymer. The data from the Declaration is presented in the following Table for the Examiner's convenience:

Table I

Experiment No.	Dispersing Agent	Crosslinking Agent (g)
I-1	Sucrose fatty acid ester	N,N'-methylene-bisacrylamide (0.016)
I-2	"	Pentaerythritol tetraallyl ether (0.015)
I-3	"	Polyallylsaccharose (0.015)
II-1	Polyoxyethylene castor oil	N,N-methylene-bisacrylamide (0.015)
II-2	"	Pentaerythritol tetraallyl ether (0.015)
III	Polyoxyethylene castor oil	Pentaerythritol tetraallyl ether (0.42)

Table I (Cont'd)

Experiment No.	Property	Dissolving Time		Viscosity of Solution (mPa s)	Viscosity of Neutralized Viscous Solution (mP s)	Note
		Without Stirring (min.)	With Stirring (min.)			
I-1	Water-absorbent	-	-	-	-	Nagasuna et al., U.S. Patent 4,973,632
I-2	*	>180	>120	2000	2000	
I-3	*	>180	>120	2100	2100	
II-1	Water-absorbent	-	-	-	-	
II-2	*	>180	>120	2050	2050	
III	Soluble in water	20	3	2	59000	Present Invention

* - Partly insoluble in water

It is clear from the results of the above-table that according to the method disclosed in Nagasuna et al., as shown in Experiment No.

I-1, when sucrose fatty acid is used as a dispersing agent, and N,N'-methylene-bisacrylamide is used as a crosslinking agent, a water-soluble polymer cannot be obtained.

Therefore, even though the method disclosed in Nagasuna et al. is employed, a water-soluble polymer cannot be obtained.

When the inventive pentaerythritol tetraallyl ether or the inventive polyallyl saccharose is used as a crosslinking agent in place of the N,N'-methylene-bisacrylamide reagent of Nagasuna et al., as is clear from the results of Experiment Nos. I-2 and I-3, a partly water-soluble polymer is obtained. The polymer is also inferior in water-solubility to the polymer obtained in Experiment III, and does not provide a neutralized solution having a high viscosity.

When the inventive polyoxyethylene castor oil is used in place of the sucrose fatty acid ester used in Experiment No. I-1, as is clear from the results of Experiment II-1 shown in Table I, a water-soluble polymer cannot be obtained.

Therefore, even though the inventive polyoxyethylene castor oil is used in place of the sucrose fatty acid employed by Nagasuna et al., a water-soluble polymer cannot be obtained.

When the inventive polyoxyethylene castor oil is used in place of sucrose fatty acid used in Experiment No. I-2, as is clear from the results of Experiment II-2 shown in Table I, a partly water-insoluble polymer is obtained. The polymer is

inferior in water-solubility to the polymer obtained in Experiment III, and does not provide a neutralized solution having a high viscosity.

On the contrary, according to Experiment No. III, as is clear from the results shown in Table I, a water-soluble polymer that can be dissolved in water in a short period of time and provides a neutralized solution having a high viscosity is obtained.

The reason why a water-soluble polymer that can be dissolved in water in a short period of time and provides a neutralized solution having a high viscosity is obtained is thought to be based upon the following reasons.

According to Experiment No. III, since a specific crosslinking agent is used, and the polymerization is carried out in a non-aqueous system using for instance an inert solvent, such as ethylene dichloride, a water-soluble polymer having the above-mentioned properties can be obtained.

On the contrary, according to Experiment Nos. I-1 and II-1, since N,N'-methylene-bisacrylamide disclosed in Nagasuna et al. is used as a crosslinking agent, and a specific crosslinking agent such as pentaerythritol tetraallyl ether is not used, a water-soluble polymer cannot be obtained.

Moreover, even though N,N'-methylene-bisacrylamide is changed to pentaerythritol or polyallyl saccharose as a

crosslinking agent, as is clear from the results of Experiment Nos. I-2, I-3 and II-2, a water-soluble polymer having a high water-solubility and providing a neutralized solution having a high viscosity cannot be obtained, since the polymerization is carried out by a reverse-phase suspension polymerization process using water.

Accordingly, since Experiment No. III employs a specific crosslinking agent, and the polymerization is carried out in a non-aqueous system using for instance an inert solvent such as ethylene dichloride, a water-soluble polymer having the above-mentioned properties can be obtained.

However, Nagasuna et al. fail to teach or suggest that the polymerization is carried out using a specific crosslinking agent in a non-aqueous system. Therefore, the skilled artisan would have no motivation in Nagasuna et al. to arrive at the present invention.

As the MPEP directs, all the claim limitations must be taught or suggested by the prior art to establish a *prima facie* case of obviousness. See MPEP § 2143.03. Based on the fact that Nagasuna et al. fail to teach or suggest that the polymerization is carried out using a specific crosslinking agent in a non-aqueous system, a *prima facie* case of obviousness cannot be said to exist. Accordingly, withdrawal of the rejection is respectfully requested.

Conclusion


In view of the above amendments and comments, Applicants respectfully submit that the claims are in condition for allowance. A notice to such effect is earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Garth M. Dahlen, Ph.D., Esq., (Reg. No. 43,575) at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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